



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

40-11-09

Log Event A

Borehole Information

| | | |
|-------------------------|----------------------------------|----------------------------------|
| Farm : <u>S</u> | Tank : <u>S-111</u> | Site Number : <u>299-W23-173</u> |
| N-Coord : <u>35,936</u> | W-Coord : <u>75,810</u> | TOC Elevation : <u>663.91</u> |
| Water Level, ft : | Date Drilled : <u>11/30/1971</u> | |

Casing Record

| | | |
|----------------------------|--------------------------------|--------------------|
| Type : <u>Steel-welded</u> | Thickness : <u>0.280</u> | ID, in. : <u>6</u> |
| Top Depth, ft. : <u>0</u> | Bottom Depth, ft. : <u>100</u> | |

Borehole Notes:

This borehole was drilled in October and November 1971 and completed at a depth of 100 ft with 6-in.-diameter casing. The driller's log contains no mention of perforations or grouting. The casing thickness is assumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

Equipment Information

| | | |
|-----------------------------------|---|--|
| Logging System : <u>1</u> | Detector Type : <u>HPGe</u> | Detector Efficiency: <u>35.0 %</u> |
| Calibration Date : <u>04/1996</u> | Calibration Reference : <u>GJPO-HAN-5</u> | Logging Procedure : <u>P-GJPO-1783</u> |

Log Run Information

| | | |
|---------------------------------|----------------------------------|-------------------------------------|
| Log Run Number : <u>1</u> | Log Run Date : <u>07/29/1996</u> | Logging Engineer: <u>Kim Benham</u> |
| Start Depth, ft.: <u>98.5</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>11.0</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |
| Log Run Number : <u>2</u> | Log Run Date : <u>07/30/1996</u> | Logging Engineer: <u>Kim Benham</u> |
| Start Depth, ft.: <u>12.0</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>0.0</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |



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Borehole

40-11-09

Log Event A

Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787

Analysis Date : 04/10/1997

Analysis Notes :

This borehole was logged in two log runs. A centralizer was used for both runs. The pre- and post-survey field verification spectra for both log runs met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the field verification spectra that best matched the data were used to establish the channel-to-energy parameters used in processing the spectra acquired during the log runs.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected only at the ground surface with an apparent concentration of 7.7 pCi/g.

The logs of the naturally occurring radionuclides show an increase in K-40 and Th-232 concentrations between depths of about 46.5 and 55 ft. The KUT concentrations increase below a depth of 62 ft.

The SGLS total count log plot reflects the log plots of the man-made and naturally occurring radionuclides.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Reports for tanks S-111 and S-112.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.